

by resource demand function parameter entity 470, which can include a data set ID to identify the appropriate data set, a resource ID to identify the resource to which the demand function applies, a resource demand type to classify the resource demand, a parameter name to identify the particular parameter and a parameter value.

[0058] The time pattern upon which a resource demand can depend can be represented by resource demand time pattern entity 475. Resource demand time pattern entity 475 can include a data set ID to identify the appropriate data set, a resource ID to identify the resource to which the time pattern applied, a resource demand type to classify the resource demand and a pattern type to identify the time pattern. Each of the values associated with a resource demand time pattern can be represented by resource demand time pattern value entity 480. Resource demand time pattern value entity 480 can include a data set ID to identify the appropriate data set, a resource ID to identify the resource to which a time pattern applies, a pattern type to identify the time pattern to which a time pattern value applies, a time value to index to identify the time pattern value and a value to represents the resource demand as it occurs relative to the provision of a service.

[0059] In addition to representing the demands placed on a particular resource, entity relation diagram can represent the marginal values of each resource at marginal value entity 485. Marginal value entity 485 can include a data set ID to identify the appropriate ID, a resource ID to identify the resource to which a marginal value applies, a time value to index the marginal value, a capacity value to represent the unit amount of resource to which a marginal value applies and a marginal value for the resource.

[0060] Table 4 summarizes the entities included in entity relationship diagram 400. Table 4 includes the entity name, the key attributes of each entity and a description of each entity.

**Table 4**

Entity Name	Entity Primary Key Attribute Name	Description
Bundle_to_Bundle_Link	Data_Set_ID, Parent_Resource_Bundle_ID, Child_Resource_Bundle_ID	A weighted association for building complex networks consisting of resource bundles.
Data_Set	Data_Set_ID	A collection of elements describing a revenue management problem in terms of resources, resource bundles, and total demand.
Marginal_Value	Data_Set_ID, Resource_ID, Time_Value, Capacity_Value	The value of a resource as the capacity is decreased by a unit or time elapses.
Resource	Data_Set_ID, Resource_ID	The basic unit used to describe the supplying company's production abilities.
Resource_Bundle	Data_Set_ID, Resource_Bundle_ID	A named group of resources or of resource bundles.
Resource_Bundle_to_Demand_Link	Data_Set_ID, Resource_Bundle_ID, Total_Demand_ID	An association of resource bundles to total demand describing what demand could (and should) be satisfied by what resource bundle.
Resource_Demand	Data_Set_ID, Resource_ID, Resource_Demand_Type	A named demand type for a given resource. This entity scopes either a demand function definition or a time pattern of both.
Resource_Demand_Function	Data_Set_ID, Resource_ID, Resource_Demand_Type	A named demand function that owns a set of parameters for a resource demand.
Resource_Demand_Parameter	Data_Set_ID, Resource_ID, Resource_Demand_Type	A named parameter value used to describe the resource demand functions.
Resource_Demand_Time_Pattern	Data_Set_ID, Resource_ID, Resource_Demand_Type, Pattern_Type	A collection of time indexed data that is used to model the demand as it accumulates (or diminishes) for a resource.
Resource_Demand_Time_Pattern_Value	Data_Set_ID, Resource_ID, Resource_Demand_Type, Pattern_Type, Time_Value	A time indexed value in the resource demand time pattern.
Resource_to_Bundle_Link	Data_Set_ID, Resource_ID, Resource_Bundle_ID	The weighted association of a resource to a resource bundle.

Entity Name	Entity Primary Key Attribute Name	Description
Total_Demand	Data_Set_ID, Total_Demand_ID	The customer demand for a product or service provided by the supplying company.
Total_Demand_Function	Data_Set_ID, Total_Demand_ID, Function_Type	A named demand function that owns a set of parameters describing the dependency of total demand on price.
Total_Demand_Function_Parameter	Data_Set_ID, Total_Demand_ID, Parameter_Name	A named value for a total demand function.
Total_Demand_Time_Pattern	Data_Set_ID, Total_Demand_ID, Pattern_Type	A historical collection of time indexed data that is used to model the total demand.
Total_Demand_Time_Pattern_Value	Data_Set_ID, Total_Demand_ID, Pattern_Type, Time_Value,	A time indexed value in the total demand time pattern.

[0061] Table 5 summarizes the key attributes of each entity of entity relationship diagram 400. Table 5 includes name of each entity, the name of each entity attribute, an exemplary data type for each attribute and a brief description of each attribute.

**Table 5**

Entity Name	Entity Attribute Name	Entity Table Column Datatype	Description
Bundle_to_Bundle_Link	Data_Set_ID	NUMBER	Identifier of data associated with owning bundle
	Parent_Resource_Bundle_ID	NUMBER	Identifier of owning bundle
	Child_Resource_Bundle_ID	NUMBER	Identifier of member bundle
	Weight	NUMBER	Member bundle's weight in relationship to other member bundles
Data_Set	Data_Set_ID	IDENT	Identifier of the data set
Marginal_Value	Data_Set_ID	IDENT	Identifier of the data set associated with the resource